CLAIMS:

1. A computer tomograph for detecting rays that are elastically scattered in an object, wherein the object is present in an examination region and the scattered rays are scattered at different scattering angles, with

- a radiation source for permeating the examination region with primary radiation, and
- a detector with detector elements which lie outside the region permeated by primary radiation and whose effective dimensions become smaller in the direction of decreasing scattering angles.

2. A computer tomograph as claimed in claim 1, with absorption elements which each cover a portion of a detector element such that the region of the scattering angle that can be detected by the respective detector element is reduced.

3. A computer tomograph as claimed in claim 1, with a polychromatic radiation source and with a detector having energy-resolving detector elements.

4. A computer tomograph as claimed in claim 1, with a radiation source for generating a fan-shaped ray and with absorption lamellae arranged between the detector and the object, which lamellae lie in planes that extend parallel to the axis of rotation and subdivide the radiation fan into sections such that the detector elements present in a column parallel to the rotation axis are substantially hit only by primary or scattered radiation from one and the same section.

5. A computer tomograph as claimed in claim 1,

- with a radiation source for generating the primary radiation either in the form of a planar fan ray or a conical ray,
- with a two-dimensional detector, and

- with a first mode of operation in which a portion of the detector elements receives the scattered radiation generated by the planar fan ray, and with a second mode of operation in which the detector elements receive the primary radiation generated in the conical ray.

6. A detector for determining elastically scattered rays, which detector comprises at least one column comprising a plurality of energy-resolving detector elements, wherein the pitch of their centers and their dimensions increase towards a maximum value in the direction of the column.

7. A detector as claimed in claim 6, wherein the pitch of the centers of two mutually adjoining detector elements g is defined by $g = a_{n+1} - a_n$, and it holds that:

$$a_{n+1} = \frac{a_n\left(1+\frac{r}{2}\right)+s}{1-\frac{r}{2}}$$ where r is a constant expressing the resolution of the scattering angle and s is the distance between two sensitive regions of mutually adjoining detector elements in the direction of the column.

8. A detector as claimed in claim 6, wherein $p_n = a_n * r$.

9. A detector as claimed in claim 6, comprising at least one detector element which is formed by a plurality of mutually adjoining sub-elements.